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SYNTHESIS AND MAO ACTIVITY OF 3-SUBSTITUTED-5-(5'-ARYL-1',3',4',- OXADIAZOL-2',YL)-1,2-DIMETHYL-PYRROLES

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(Received January 30, 1989; revised October 23, 1989)

Methylation of 3-substituted-2-methylpyrrole-5- carboxaldehyde gave the corresponding methylated derivative, which condensed with acylhydrazines to afford the corresponding hydrazones. Oxidative cyclisation of the prepared acylhydrazones furnished 3-substituted-5- (5'-aryl-1',3',4'-oxadiazol-2'-yl)- -1,2-dimethyl-pyrroles. These compounds were evaluated for their monoamine oxidase (MAO) activity (in vitro). Some of them showed activating effect while others have inhibitory action on MAO.

Key words: 3-substituted-5-(5'-aryl-1',3',4'-oxadiazol-2-yl)-1,2-dimethyl-pyrroles, MAO activity.

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TITROMETRIC STUDIES OF THE ADSORPTION OF SOME ALIPHATIC ORGANIC ACIDS FROM AQUEOUS SOLUTIONS ON THE SURFACE OF ACTIVATED CHARCOAL

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(Received July 6, 1988; revised November 22, 1989)

Adsorption of acrylic acid and crotonic acid from aqueous solutions on the surface of activated charcoal by titrometric method has been undertaken. The rate of adsorption of acrylic acid on activated charcoal is higher than crotonic acid. The Langmuir and Freundlich plots have been drawn and the constants involved in Langmuir and Freundlich isotherms are calculated. A possible explaination of the adsorption of aliphatic organic acids from aqueous solutions on the surface of activated charcoal has been given.

Key words: Adsorption, Uncovered surface, Partial balance force

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FT. INFRARED SPECTROSCOPIC ANALYSIS OF VARIOUS PAKISTANI COALS

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(Received December 21, 1988, revised November 28, 1989)

FT-Infrared spectroscopy has been used for the structural characterization of five Pakistani coals. These include Lakhra coal from Sind Province, Makerwal coal from Punjab Province, Sor- Range and Sharigh coals from Baluchistan Province and Kotli coal from Azad Kashmir. Almost all the peaks observed in the spectra of these coals have been assigned to various functional groups. Important similarities and differences observed in the FT-IR spectra of these coals, point to the similarities and differences between the structures of these coals.

Key words: FT-IR spectroscopy, coals.

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STUDIES ON CHERAT VOLCANIC ASH NWFP PAKISTAN

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(Received December 19, 1988; revised November 27, 1989)

The volcanic ash deposits of Garhi Chandan near Peshawar have been studied for the first time. Geology, chemistry, swelling properties, bleaching property, x-ray diffraction, DTA, DTG and TG results have been presented in the paper. These studies reveal that volcanic ash contains montmorillonite, illite, feldspar, quartz and calcite. Acid activation tests show that the bleaching property of volcanic ash is sixty per cent active as compared to that of imported fuller's earth. Volcanic ash after beneficiation may be exploited commercially as a filler in soaps, paper, plastics and other products and as a decoloriser of vegetable oil.

Key words: Volcanic ash, Cherat, NWFP - Pakistan.

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CARBON-13 MAGNETIC RESONANCE CHEMICAL SHIFT ADDITIVITY RELATION SHIPS OF CLINICALLY USED FUROCOUMARINS AND FUROCHROMONES

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(Received December 3, 1988; revised October 25, 1989)

The natural abundance carbon-13 nuclear magnetic resonance spectra of various clinically used furocoumarins and furochromones have been studied. The assignment of carbon chemical shift values were based on the theory of chemical shift, additivity rules, SFORD spectra and model compounds.

Key words: C-13, magnetic resonance, Furocoumarins, Furochromones

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TIDAL CHARTS OF THE ARABIAN SEA NORTH OF 20° N

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(Received April 10, 1988; revised January 18, 1989)

A depth-averaged two-dimensional numerical model (20° N to 25° N, 56° E to 70° E) of the Arabian sea is developed to reproduce the major diurnal and semi-diurnal tidal constituents. The model has a resolution of 1/2° both latitude and longitude and has open boundaries at latitude 20° N and in the strait of Hormuz at longitude 56°. 22'E. The boundary conditions on the open boundaries are derived from the emperical co-amplitude and co-tidal charts of the Arabian sea.

The classical non-linear hyperbolic initial and boundary value problem of long wave propagation in shallow waters is solved by the explicit finit difference technique. The results regarding tidal elevation are used to develop detailed co-amplitude and co- tidal charts for principal tides. These charts make it possible to predict the tidal elevation at the coast and in the open sea area with greater accuracy.

Key Words: Tide, Numerical model, Arabian Sea.

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EVIDENCE OF SOLVENT AND TEMPERATURE DEPENDENT MULTINUCLEAR NMR CHEMICAL SHIFTS IN 1,1,1,3,3,3-HEXAMETHYLDISILAZANE

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Biological Sciences Section

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STUDIES ON SEED GERMINATION AND INTRODUCTION OF *DUBOISIA MYOPOROIDES* R. Br.

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(Received July 5, 1989; revised November 6, 1989)

Optimum conditions for breaking the dormancy and storage of *Duboisia myoporoides* R.Br. seeds were studied. Gibberellin treatment at 100, 200 and 300 ppm gave positive responses. The treatment time with these concentrations was 24 hours. The effect of light on germination was negligible.

Key words: *Doboisia myoporoides*, Seed dormancy, Gibberellic acid.

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EUDORYLAIMUS ANDERSONI AND *APORCELAIMELLUS SACCHARI* N. SP. FROM PAKISTAN

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(Received June 13, 1989, revised October 19, 1989)

Eudorylaimus andersoni N. sp., *Aporcelaimellus sacchari* N. sp. are described and illustrated. *Eudorylaimus magestri* Andrassy [19] and *Aporcelaimellus taylori* Yeates [12] are reported for the first time from Pakistan. *Eudorylaimus andersoni* N. sp. differs from *E.silvaticus* (Brezeski [13] in length of odontostyle and shape of the tail. *Eudorylaimus andersoni* N. sp. is variable from *E. diadenatus* (Thorne and Swanger [10] Andrassy [2] in body length, shape and length of the tail, and differs from *E. cinctus* (Thorne and Swanger [10] Andrassy [11] in shape of the lip region and amphids. *Eudorylaimus andersoni* is variable from *E. sabulophilos* Tjekema *et. al.* [14] in length of the odontostyle, shape of the amphids, and vulva percentage. *Aporcelaimellus sacchari* N . sp. differs from *A. captitatus,* (Thorne and Swanger [10] Heyns [9] in the length of odontostyle, shape of the amphid and lateral chords. *Aporcelaimellus sacchari* N. sp. is also variable from *A. williamsi,* Heyns [9] in the shape of the tail and length of odontostyle. *Aporcelaimellus* sacchari N. sp. also differs from *A. krygeri* (Ditelvesen,) Heyns [9] in the location of the vulva and 'a' ratio.

Key words: *Eudorylaimus* N. sp and *Aporcelaimellus* N . sp.

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STUDIES ON MEDICINAL HERBS-I: SERUM BIOCHEMICAL CHANGES INDUCED IN RABBITS BY ADMINISTRATION OF *COLCHICUM AUTUMNALE*

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(Received August 10, 1987; revised November 13, 1989)

Powdered roots of *Calchicum autumnale* and pure colchicin were administered orally to rabbits at a dose of 1.5 mg/kg and 0.25 mg/kg respectively. Five doses were administered at 0,24,48,72 and 96 hours. The serum was analysed at 6,12,24,48,96, 144 and 192 hours after the last dose. Both drugs induced a decrease in serum cholesterol and uric acid, while an increase in lipids was observed. Although the lipids became normal at the end of the experiment, the values of cholesterol and uric acid were still different ($p<0.01$) from the control. The glucose did not give a defineable pattern. The activity of serum LDH was increased by the crude drug and decreased by pure colchicine. Activities of SGOT and SGPT were decreased significantly by the crude drug.

Key words: Medicinal herbs, Serum, Rabbits

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NUTRITIONAL COMPOSITION OF GANDANA (*ALLIUM ASCALONICUM* L.)

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(Received May 30, 1989, revised October 21, 1989)

The leaves of *Allium ascalonicum* L., locally known as 'Gandana' has been recently introduced by Afghans and is used both as vegetable and salad. With a view to assess its nutritional value, moisture, fibre, protein, ether extract and ash content of the vegetable were, determined alongwith sugars, total acidity and ascorbic acid. Among the minerals calcium, iron, magnesium, manganese, phosphorous, potassium and sodium have been estimated and report.

Key words : Gandana, *Allium ascalonicum* L., Proximate chemical composition.

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EFFECT OF AGRONOMIC FACTORS ON THE INCIDENCE OF *HELIOTHIS ARMIGERA* (HUBN.) AND ITS PARASITE *CAMPOLETIS CHLORIDEAE* (U.) IN CHICKPEA FIELD

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(Received February 1, 1989; revised October 2, 1989)

Sowing date has significant effect on the larval population density of *Heliothis armigera* (Hubn.) in chickpea field. Plant population has insignificant effect on the larval density. The pupal population density of the larval parasite. *Campoletis chlorideae* (Uchida) was neither affected by sowing date nor by the plant population. However, pupal density of *C. chlorideae* was found a quadratic function of the larval density of *H. armigera*. All these findings can be utilized for monitoring the population of *H. armigera* in the field.

Key Words : *Heliothis armigera, Campoletis chlorideae, Chickpea*

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MYCOFLORA FROM WHEAT COLLECTED IN SIND AND PUNJAB

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(Received June 19, 1989; revised October 4, 1989)

One hundred and ten seed samples of 22 wheat varieties collected from Punjab and Sind were analyzed for seedborne mycoflora. A total of 36 species of fungi in 16 different genera were isolated. The places from where the seedborne fungi were isolated in higher frequencies were Bahawalpur, Hyderabad, Tandojam and Faisalabad. High level of infection was found in six wheat varieties ('Pavon', Yecora', Pari-73', Lu-26', Punjab-81', Blue Silver', 'ZA-77') of Punjab and in seven wheat varieties ('Tandojam-83', Yecora', Kohinoor', 'WL-711', 'Pak-81', 'Pavon', 'Sonalika') of Sind.

Key words: Wheat, Seed mycoflora, Distribution.

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KEEPING QUALITIES OF FISH DHOTHER (*POMADASYS* SPP) AND SUA (*JOHNIUS* SPP) IN FILLETED AND MINCED FORMS AT LOW TEMPERATURES

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(Received January 29, 1989; revised October 23, 1989)

Storage stabilities at -10° and -18° for 24 weeks were determined for fillets and minced Dhother (*Pomadasys* spp) and Sua (*Johnius* spp) fishes. Quality changes were evaluated at about monthly intervals during the storage period. Sua fish was found to be more stable as compared with Dhother. Both the species showed relatively greater stability at-18° than at -10°. In minced flesh the rate of deterioration was slightly faster than fillets irrespective of the fish species. At -10° a slight change in colour was noticed at the end of the storage in the minced products, the change being relatively greater in Dhother as compared to Sua. The results indicate that these fish species in fillet and minced form may be stored at least for 24 weeks at -10° and -18° without any serious loss of quality.

Key words: Tropical fish, Frozen storage quality, Fish minced.

Short Communication

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EVALUATION OF ANTIEMETIC ACTION OF *TAMARINDUS INDICA*-LINN

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(Received 23, October 1989)

Short Communication

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INFLUENCE OF *PROSOPIS GLANDULOSA* WATER EXTRACT ON THE SEEDLING GROWTH OF WHEAT CULTIVARS

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Some basic laboratory experiments were conducted to

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RECOVERY OF SULPHUR FROM SULPHUR REFINERY WASTE

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(Received June 7, 1989; revised November 7, 1989)

Elemental sulphur has been recovered from sulphur refinery waste containing 16% sulphur, by the flotation technique. The sulphur concentrate, assaying 81% sulphur at a recovery of 90% has been obtained. Flotation parameters such as pH, percent solids, feeds size, and reagents for obtaining optimum grade and recovery have been studied.

Key words: Sulphur, Flotation technique, Parameters.

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A PROCESS FOR THE PREPARATION OF SOY FLAKES

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(Received February 1, 1989; revised October 21, 1989)

Soy-flakes have been prepared from whole soybean and soybean meal in different combinations with rice, maize, and wheat. The mixture is thermally treated to inactivate the enzymes and made into flakes using drum drier. The product prepared from whole soybean contains 25-31% protein 11-24% oil and 5-6% moisture. Whereas the product prepared from soymeal contains 26-33% protein, 3-6% oil and 4-6% moisture. The biological value evaluated as NPU and PER is 84% and 3.4% respectively compared to that of casein. The product remains acceptable for 3 months.

Key words: Soy-flakes, Soybean, Soybean meal.

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ACIDULATION OF ROCK PHOSPHATE OF HAZARA FOR THE PRODUCTION OF PHOSPHATIC FERTILIZER

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(Received December 17, 1988, revised September 7, 1989)

Investigation of an ideal mesh size for maximum recovery of P_2O_5 from rock phosphate of Hazara by acidulation with Sulphuric acid was undertaken. Different mesh sizes of the rock were treated with various concentrations of the acid. Effect of temperature and H_2SO_4 concentration were studied. As a result of a number of experiments it was found that maximum recovery of P_2O_5 occurs at a mesh size of -100+125.

Key Words: Acidulation, Phosphate rock, Phosphatic fertilizer.